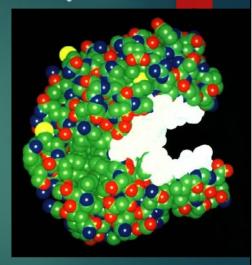
### What Are Enzymes?

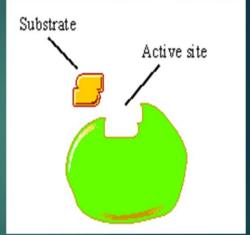
- Most enzymes are Proteins (tertiary and quaternary structures)
- ► Act as Catalyst to accelerates a reaction
- ► Not permanently changed in the process





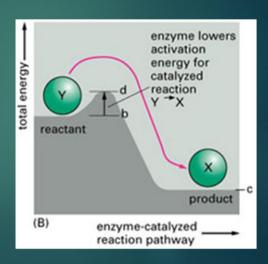
► Are specific for what they will catalyze

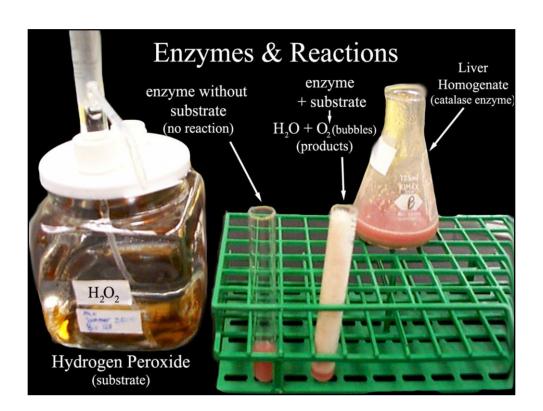
- ► Are Reusable
- ▶End in -ase
  - -Sucrase
  - -Lactase
  - -Maltase



Enzymes work by

weakening bonds which lowers activation energy





## What Affects Enzyme Activity?

- ▶Three factors:
  - 1. Environmental Conditions
  - 2. Cofactors and Coenzymes
  - 3. Enzyme Inhibitors

### 1. Environmental Conditions

- 1. Extreme Temperature are the most dangerous
- high temps may denature (unfold)
   the enzyme.
- 2. pH (most like 6 8 pH near neutral)
- 3. Ionic concentration (salt ions)

# 2. Cofactors and Coenzymes

► Inorganic substances (zinc, iron) and vitamins (respectively) are sometimes need for proper enzymatic activity.

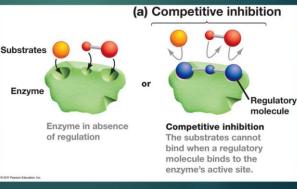
#### ▶ Example:

Iron must be present in the quaternary structure - hemoglobin in order for it to pick up oxygen.



a. Competitive inhibitors: are chemicals that resemble an enzyme's normal substrate and compete with it for the active site.

(a) Competitive inhibitions.



### **Inhibitors**

#### b. Noncompetitive inhibitors:

Inhibitors that do not enter the active site, but bind to another part of the enzyme causing the enzyme to change its shape, which in turn alters the active site.

Figure 6.14 Enzymo inhibition

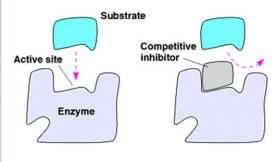
Substrate
Competitive 
inhibition

(a) Substrate are somally 
sinite and substrate are competitive 
inhibitor 
innimis substrate and 
competes for active sile.

(c) expectation inhibitor 
innimis substrate and 
competes for active sile.

(c) expectation inhibitor 
innimis substrate and 
innimis substrate 
innimis substrate

Figure 6.14 Enzyme inhibition



- (a) Substrate can normally bind to active site of enzyme.
- (b) Competitive inhibitor mimics substrate and competes for active site.



Noncompetitive inhibitor

(c) Noncompetitive inhibitor alters conformation of enzyme so active site is no longer fully functional.

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